11. (Amended) The method of claim 2, wherein said peptide to be purified is selected from polypeptides, oligopeptides, proteins, receptors, as well as homologs, analogs and derivatives thereof.

12. (Amended) The method of claim 2, wherein said peptide to be purified is selected from glucagon, hGH, insulin, FactorVII, FactorVIIa, FactorVIIai, FFR-FactorVIIa, glucagon-like peptide-1, glucagon-like peptide-2 and analogs, as well as derivatives thereof.

13. (Amended) The method of claim 2, wherein the ratio of organic modifier to water on a weight percent basis is from 1:99 to 99:1.

14. (Amended) The method of claim 2, wherein the organic modifier is selected from C_{1-6}-alkanol, C_{1-6}-alkenol, C_{1-6}-alkynol, urea, guanidine, C_{1-6}-alkanoic acid, C_{2-6}-glycol, or C_{3-7}-polyalcohol.

Please add the following claim:

15. (New) The method according to claim 1, wherein the peptide is selected from the group consisting of Val^8GLP-1(7-37), Thr^8GLP-1(7-37), Met^8GLP-1(7-37), Gly^8GLP-1(7-37), Val^8GLP-1(7-36) amide, Thr^8GLP-1(7-36) amide, Met^8GLP-1(7-36) amide, Gly^8GLP-1(7-36) amide, Arg^{34}GLP-$1_{(7-37)}$, and B28IsoAsp insulin.

REMARKS

Claims 2, 4, 6 and 11-15 are pending following entry of the present amendments.

The amendment to the specification was made to recite the status of parent application 09/522,694 as requested by the Examiner.

The amendment to claims 2 and 4 to recite that the elution of peptide in step (b) is carried out in the absence of organic modifier finds support at page 2, lines 11-12 and page 3, lines 30-31 of the specification. Added claim 15 finds support at page 6, lines 16-19 of the specification.

In accordance with 37 C.F.R. 1.121, a "marked-up" copy of the amendments to the specification and claims is appended to this Amendment.

Rejections Of The Claims Under 35 U.S.C. 112, Second Paragraph

The Examiner rejected claims 6, 11 and 12 as indefinite for the use of the terms:

1) "and/or" or "if necessary" in claim 6; and
2) "derivatives thereof", "vira" or "FFR-Factor VIIa" in claims 11 and 12.

Applicant respectfully traverses this rejection.

With respect to the first ground of rejection, Applicant submits that the amendments to claim 6 renders the rejection moot.

With respect to the second ground of rejection, Applicant notes that the phrase "vira" has been deleted from claim 11.

Turning to the phrase "derivatives thereof" in claims 11 and 12, Applicant submits that in view of the definition of "derivative" on page 17, lines 7-10 as a peptide in which one or more of the amino acid residues of the parent peptide have been chemically modified, one skilled in the art would have a clear and definite understanding of what is meant by the phrase "derivatives thereof".

As to "FFR-Factor VIIa" in claim 12, Applicant notes that it is clear from the specification that "FFR" stands for Phe-Phe-Arg (see page 12, line 30) and that the phrase or "FFR-Factor VIIa" was previously found to be clear and definite in its meaning by the Patent Office as evidenced by the inclusion of this phrase in claim 4 of the US patent 6,451,987 that issued from parent application 09/522,694.

Accordingly, in view of the above amendments and remarks, Applicant respectfully requests withdrawal of this rejection.

Rejections Of The Claims Under 35 U.S.C. 102 (b)

The Examiner rejected claims 2, 6, 11, 13 and 14 as anticipated by Lile et al US Patent 5,606,031 and claims 2, , 4, 6 and 11-14 as anticipated by Jorgensen US patent 3,907,676.

Applicant respectfully traverses these rejections.

The pending claims are directed to a method for purifying a peptide from related impurities comprising

a) eluting related impurities from an anion exchange chromatography matrix using an aqueous buffer containing an organic modifier and

b) eluting the peptide using aqueous buffer in the absence of organic modifier.

By comparison, Lile disclose a method for purifying neurotrophic factor where the impurities were eluted from an anion exchange chromatography matrix using a Buffer A (8M urea, 20mM tris-HCl, pH 9.0) and the peptide was eluted using Buffer b (8M urea, 36 mM MES, pH 6.0) or a linear gradient of buffer A and B, and Jorgensen disclose a method for purification of insulin, where both the peptide and impurities were eluted from an anion exchange chromatography matrix using a buffer containing 40-80% (v/v) ethanol

Hence, in contrast to the claimed processes where impurities are eluted using an aqueous buffer containing an organic modifier and the peptide is eluted using aqueous buffer in the absence of organic modifier, the prior art of Lile and Jorgensen disclose ion exchange processes where both the impurities and the peptide are eluted using a solution containing an organic modifier (8M urea for Lile and 40-80 % ethanol for Jorgensen). Accordingly, as neither Lile nor Jorgensen anticipate the claimed methods, withdrawal of the §102(b) rejections is respectfully requested.

Rejection Of The Claims Under 35 U.S.C. 103

The Examiner rejected claims 2, 4, 6, 11, 13 and 14 as obvious over Lile et al US Patent 5,606,031 in view of Binz et al US Patent 6,113,911. Lile is cited for the reasons set forth in the 102 (b) rejection and Binz is cited by the Examiner as disclosing that an immunogenic agent containing a peptide can be purified on an anion exchange column under industrial conditions.

Applicant respectfully traverses this rejection.

As discussed above, in contrast to the claimed processes where impurities are eluted using an aqueous buffer containing an organic modifier and the peptide is eluted using aqueous buffer in the absence of organic modifier, the prior art of Lile disclose ion exchange processes where both the impurities and the peptide are eluted using a solution containing an organic modifier (8M urea). As Binz does nothing to remedy this deficiency in the teachings

of Lile, Applicant submits that the combination of Lile and Binz cannot render the claimed invention obvious and withdrawal of the §103 rejection is therefore respectfully requested.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and early and favorable consideration to that end is respectfully requested

Respectfully submitted,

Date: July 22, 2003

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"Marked-Up" Copy of Amendments To The Specification

Please replace the paragraph at page 1, after the title with the following paragraph:

--CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional of 09/522,694 filed March 10, 2000, now US Patent No. 6,451,987, and claims priority under 35 U.S.C. 119 of U.S. provisional application nos. 60/125,882 and 60/179,335 filed March 24, 1999 and January 31, 2000, respectively, and of Danish application nos. 1999 00360 and 2000 00083 filed March 15, 1999 and January 19, 2000, respectively, the contents of which are fully incorporated herein by reference.—

"Marked-Up" Copy Of Amendments To The Claims

2. (Amended)[An anion exchange chromatography process] A method for purifying a peptide from a mixture comprising said peptide and related impurities, [the process] said method comprising [the steps of]:

a) eluting said related impurities of said mixture from an anion exchange chromatography matrix using [in] a solution comprising an organic modifier, water, optionally a salt component and optionally a buffer, at a linear or step gradient or isocratically in salt component, and at pH-values optionally maintained with a buffer so that said peptide has a negative local or overall net charge and said related impurities have a local or overall negative net charge which is lower than the negative net charge of said peptide so as to remove said related impurities; and

b) subsequently, eluting said peptide in the absence of an organic modifier, by a step or linear change to an aqueous solvent optionally with a salt component, at the same or lower pH-values optionally maintained with a buffer.

4. (Amended) An industrial method for producing a pure peptide[, the method including an anion exchange chromatography process for purifying a peptide] from a mixture comprising said peptide and related impurities, [the] said method comprising [the steps of]:

a) eluting said related impurities of said mixture from an anion exchange chromatography matrix using [in] a solution consisting essentially of an organic modifier, water, optionally a salt component and optionally a buffer, at a linear or step gradient or isocratically in salt component, and at pH-values optionally maintained with a buffer so that said peptide has a negative local or overall net charge and said related impurities have a local or overall negative net charge which is lower than the negative net charge of said peptide so as to remove said related impurities; and

b) subsequently, eluting said peptide in the absence of an organic modifier, by a step or linear change to an aqueous solvent optionally with a salt component, at the same or lower pH-values optionally maintained with a buffer.

6. (Amended) [A] The method [for isolating a peptide, the method including purification of a peptide from a mixture containing said peptide and related impurities via an anion exchange chromatography process, the anion exchange chromatography process] according to claim 1 further comprising [the steps of:

a) eluting said related impurities of said mixture in a solution comprising an organic modifier, water, optionally a salt component and optionally a buffer, at a linear or step salt component gradient or isocratically, and at pH-values optionally maintained with a buffer so that said peptide has a negative local or overall net charge and said related impurities have a local or overall negative net charge which is lower than the negative net charge of said peptide so as to remove said related impurities,

b) subsequently, eluting said peptide by a step or linear change to an aqueous solvent optionally with a salt component, at the same or lower pH-values optionally maintained with a buffer;

and subsequently, if necessary,] subjecting the peptide eluted in step (b) to analytical tests [and/or] or further purification[, and isolating said peptide in a conventional manner].

11. (Amended) The [process] method of claim 2, wherein said peptide to be purified is selected from polypeptides, oligopeptides, proteins, receptors, [vira,]as well as homologs, analogs and derivatives thereof.

12. (Amended) The [process] method of claim 2, wherein said peptide to be purified is selected from glucagon, hGH, insulin, FactorVII, FactorVIIa, FactorVIIai, FFR-FactorVIIa, glucagon-like peptide-1, glucagon-like peptide-2 and analogs, as well as derivatives thereof.

13. (Amended) The [process] method of claim 2, wherein the ratio of organic modifier to water on a weight percent basis is from 1:99 to 99:1.

14. (Amended) The [process] method of claim 2, wherein the organic modifier is selected from C_{1-6}-alkanol, C_{1-6}-alkenol, C_{1-6}-alkynol, urea, guanidine, C_{1-6}-alkanoic acid, C_{2-6}-glycol, or C_{3-7}-polyalcohol.